ECSM Overview
Basin Commission Meeting
02/25/09

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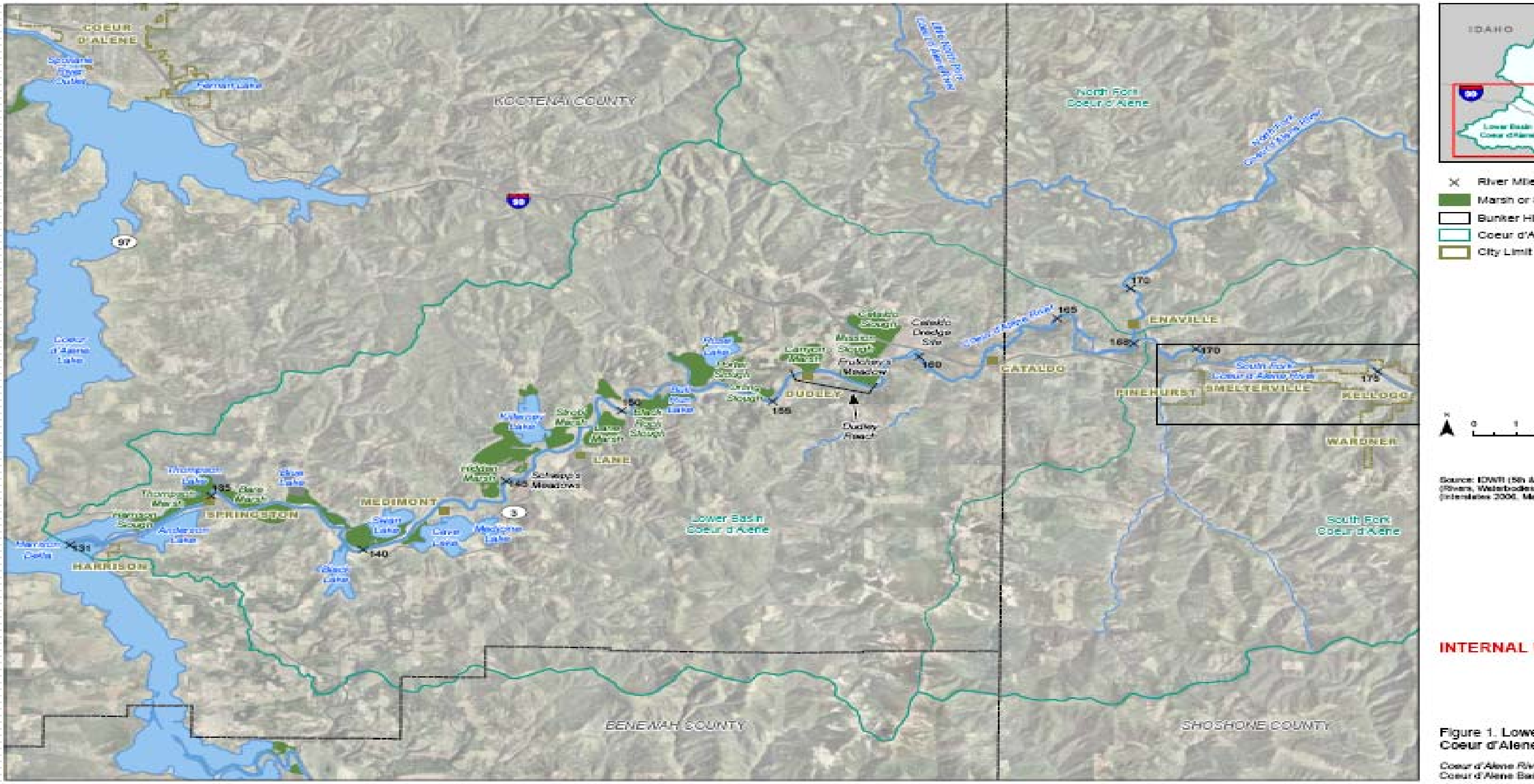
Today’s objectives

- To provide a more in-depth understanding of the ECSM for LB CDAR and the path forward.
- To describe the ECSM overview memo and share the schedule for other associated deliverables.
- To receive input on approach → improvements.
- Share key sampling data from ‘08

Context for LB Eco-Planning

- EPA Setting priorities for ecological cleanup for the LB Remedy
- As UB ROD Amendment moves forward, EPA must answer questions before fully implementing LB
  - Primarily Sediment Transport and Recontamination
- This approach consistent with NAS
- Over next few years would be to update existing ROD. Likely ➔ Future ROD Amendment for LB

LB ECSM Overview – Overview Map



SFCDR - Smelterville Flats

SFCDR - Pinehurst

Confluence of NF & SFCDA River

CDAR near Mission

CDAR Near Mission (GE synthetic image)

Common Working Definition

Conceptual Site Model - a depiction of the working hypothesis of a site based on current knowledge.

- ✓ Identifies potential exposure pathways
  - ➢ Relationship between sources, source areas, transport mechanisms, exposure routes and receptors
- ✓ Determine the necessity and scope of an intrusive investigation
- ✓ Evaluate exposure pathway completeness

Conceptual Site Model Summary

- Completed for the CDA Basin in 2000

TECHNICAL MEMORANDUM — CH2MHILL

DRAFT Final Conceptual Site Model Summary and Update

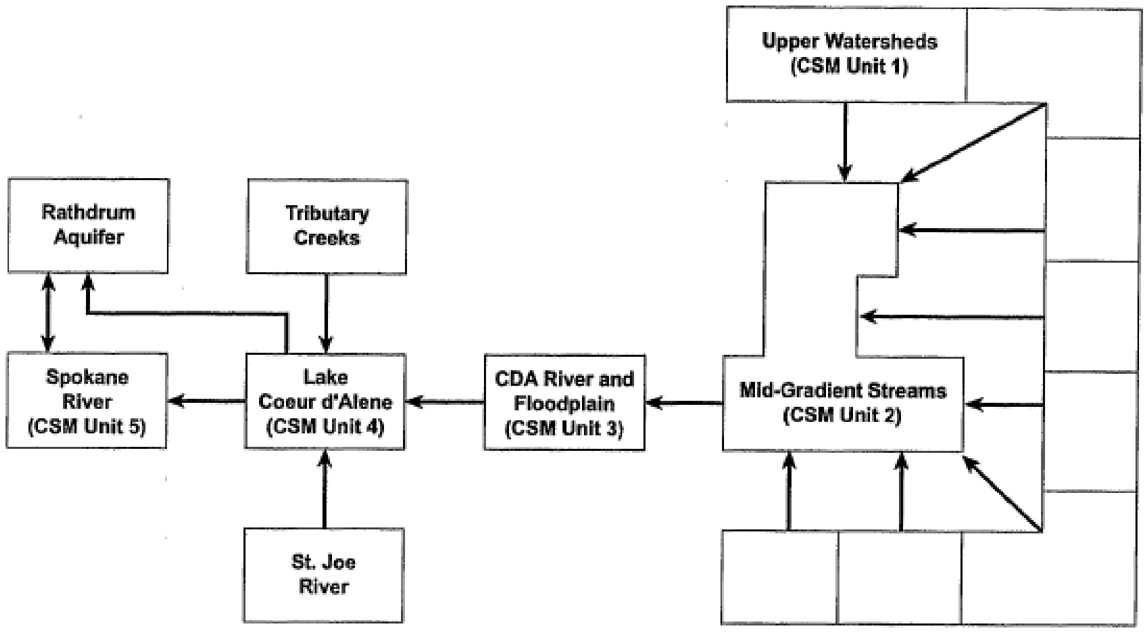
TO: U.S. Environmental Agency, Region 10
URS Corp.

COPIES: Dan Winstanley/CH2M HILL

FROM: Don Heinle/CH2M HILL

DATE: August 31, 2000

Basin CSM & Graphic Linkage



Lower CDAR Segment Components

Table 1
Draft CSM Listing: CSM Units, Watersheds, Segments, and Segment Descriptions
(Page 4 of 5)

CSMUnit	Watershed	SegmentName	Segment Description	CSMSegID
CSM Unit 02, Mid-Gradient Watersheds	South Fork	MidGradSeg02	South Fork Segment 02: South Fork Coeur d'Alene River from Kellogg to Enaville. - Elizabeth Park through superfund site to Enaville at confluence with North Fork.	14
CSM Unit 03, Lower Coeur d'Alene River Watershed	Coeur d'Alene River Below Cataldo	LCDRSeg01	Lower Coeur d'Alene River Segment 01: Old Cataldo Bridge to Cataldo boat landing below Cataldo Mission.	12
CSM Unit 03, Lower Coeur d'Alene River Watershed	Coeur d'Alene River Below Cataldo	LCDRSeg02	Lower Coeur d'Alene River Segment 02: Cataldo Boat landing to Killarney Lake Road.	29
CSM Unit 03, Lower Coeur d'Alene River Watershed	Coeur d'Alene River Below Cataldo	LCDRSeg03	Lower Coeur d'Alene River Segment 03: Killarney Lake Road to Killarney Lake Canal.	30
CSM Unit 03, Lower Coeur d'Alene River Watershed	Coeur d'Alene River Below Cataldo	LCDRSeg04	Lower Coeur d'Alene River Segment 04: Killarney Lake Canal to upper end of Bear Marsh, including Killarney Lake.	31
CSM Unit 03, Lower Coeur d'Alene River Watershed	Coeur d'Alene River Below Cataldo	LCDRSeg05	Lower Coeur d'Alene River Segment 05: Upper end Bear Marsh to Harrison Bridge.	32
CSM Unit 03, Lower Coeur d'Alene River Watershed	Coeur d'Alene River Below Cataldo	LCDRSeg06	Lower Coeur d'Alene River Segment 06: Harrison Bridge to Coeur d'Alene Lake.	33

What do we need from an ECSM?

- Focused understanding of the contaminant transport and deposition mechanisms in the (CDAR)
- Fundamental understanding of the key sources and sinks
- Development of a tool to predict contaminant transport and use in decision making → implementation.
- Validation of appropriate metrics that can monitor/display benefits of remediation

CSM Key Findings (2002 ROD)

- Mining wastes in the UB (SF, CC & NC) continue to act as sources of both particulate and dissolved-phase metals
- Sig. vols of mining wastes from the UB ➔ LB and are present in the river bed, banks, and floodplain soil and in sediments in lateral lakes and marshes
- Deposited wastes in the U & L Bs likely to be exposed, mobilized, transported, and redeposited downstream during flood events.
- The NFCDR contributes >> vol. of clean water and sediment than SFCDR, ➔ increasing total vol. of water and seds in LB and diluting contaminant concentrations.
- Early mining practices were less efficient in recovering metals from ore ➔ older (and deeper) sediment deposits with generally higher contaminant concentrations than more recent deposits

CSM Key Findings (2002 ROD)

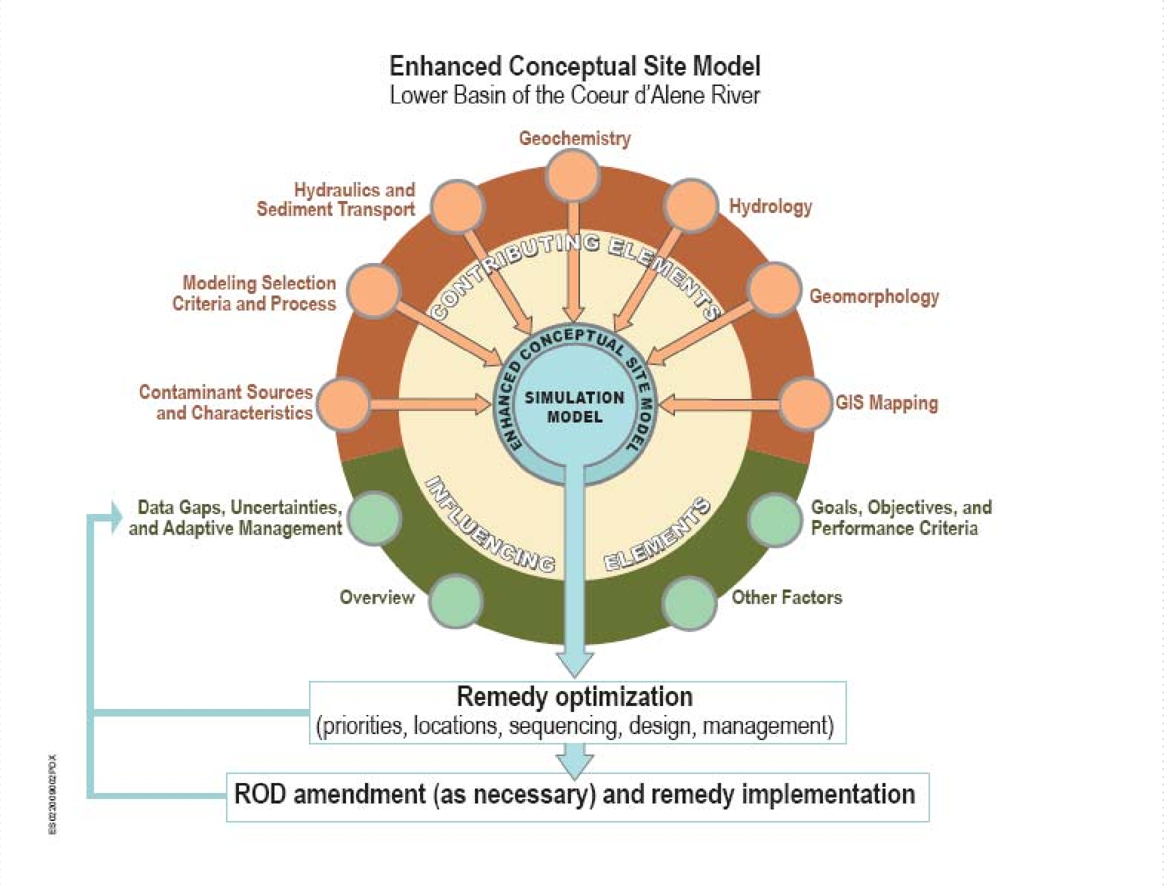
- Contaminants such as Pb, Zn, Cd and As different geochemical characteristics ➔ different fate and transport characteristics; lead is primarily present in sediments, but zinc and cadmium are present in both aqueous and solid phases
- Pb, Zn, and As are considered the metals of principal concern - HH, and Pb, Cd, and Zn - ecological receptors
- Particulate lead in the Lower Basin is a primary source of risk to both human and waterfowl receptors
- Lead and other metals may be present in colloidal forms that resist settling and remain suspended for extended t
- CDAR backs up as far as Cataldo influenced by the lake, allowing contamination borne by floodwaters to spread across the floodplains and deposit in lateral lakes and marshes
- Concentrations of metals are generally higher near the river and in the lateral lakes more directly connected to CDAR

Development of ECSM

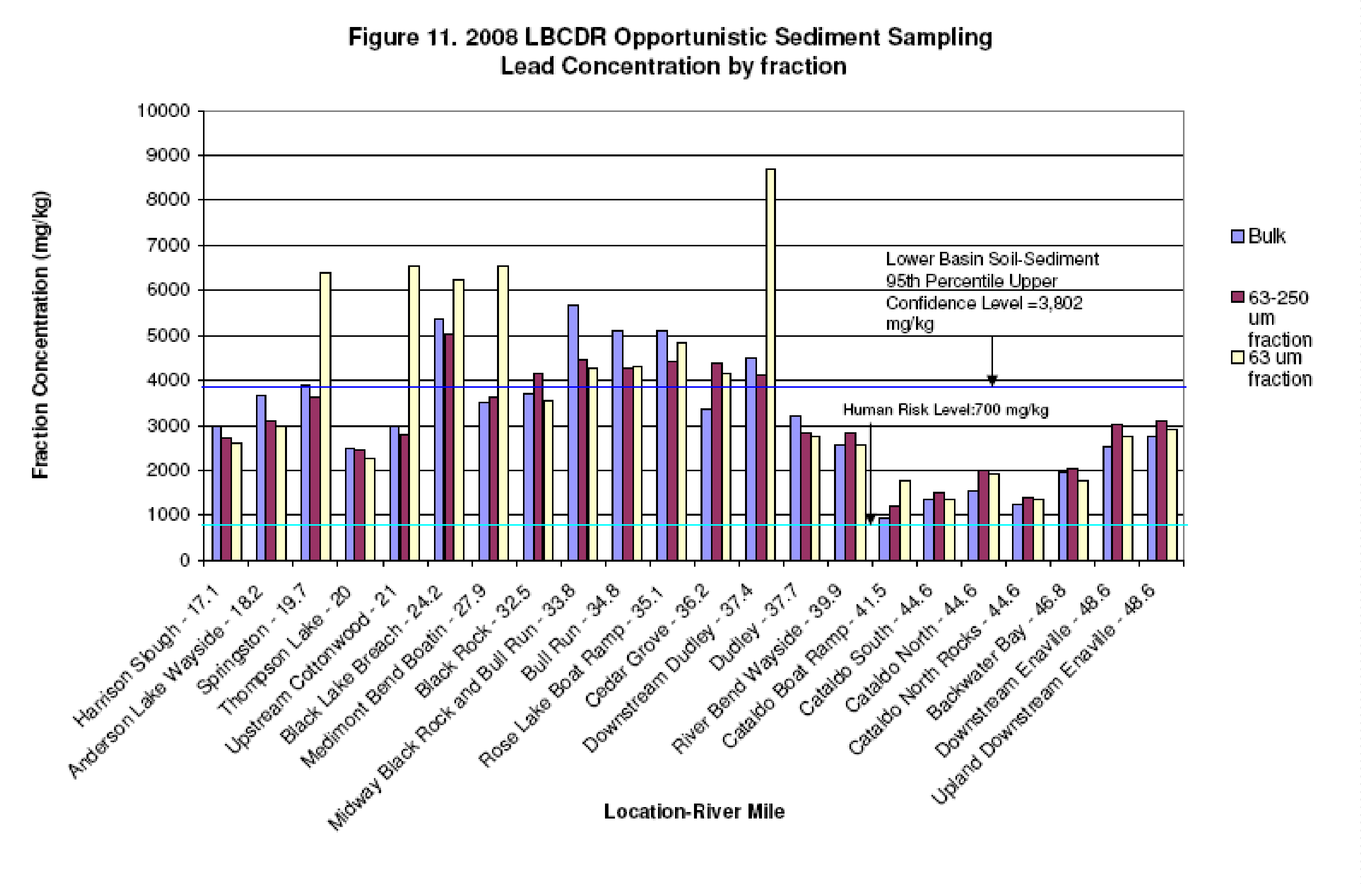
TABLE A-2 - ECSM TECHNICAL MEMORANDUMS
Coeur d'Alene River Lower Basin OU3

Memo Topic	Memo Code	Description	Estimated Date Available to EPA Reviewers
Overview	A	Provides background, purpose and approach to ECSM.	October 15, 2008
Goals, objectives and performance criteria	B	Identifies goals and objectives for Lower Basin portion of OU3, and identifies measures of performance and how they can be used to assess task sequencing, interim milestones and project success.	November 30, 2008
Hydrology	C	Input to probability, characteristics and effects of flood and non-flood events for ECSM and modeling.	January 30, 2009
Hydraulics	D	Modeling provides data on flow, inundation and velocity in various reaches, and key input to sediment recruitment deposition at given cross sections.	January 30, 2009
Geomorphology & aerial photography	E	Addresses effects of hydraulics on erosion and deposition on river bed, banks, floodplain and lateral lakes.	February 28, 2009
Geochemistry	F	Assesses effects of groundwater/surface water interactions and other factors related to contaminant mobility, solubility, precipitation and contaminant loading.	January 30, 2009
Contaminant sources & characteristics	G	Identifies locations and characteristics of significant sources of contaminant loading, including river bed and banks in Lower Basin. Assesses temporal comparability and usability of existing sediment data.	March 31, 2009
Modeling selection criteria & process	H	Assesses existing models for Upper and Lower Basins of the Coeur d'Alene River, their strengths and limitations, and their relative ability to meet long-term project objectives.	March 31, 2009
GIS and mapping/ vegetation data	I	Documents data needs and uses to allow a coordinated approach to accessing, coordinating and utilizing data within a GIS framework.	February 28, 2009
Data requirements & data gaps	J	Outlines the data needed for the ECSM as identified by the ECSM technical memorandums, and assesses these needs relative to existing and planned data collection. Identifies data gaps, data needs and schedules.	March 31, 2009
Related Elements	K	Describes factors in addition to the predictive model that can be combined in a "weight of evidence" approach to evaluating sources, potential remedial designs, remedy effectiveness and other factors.	March 31, 2009

Enhanced CSM Graphic



’08 Flood Deposit – Pb



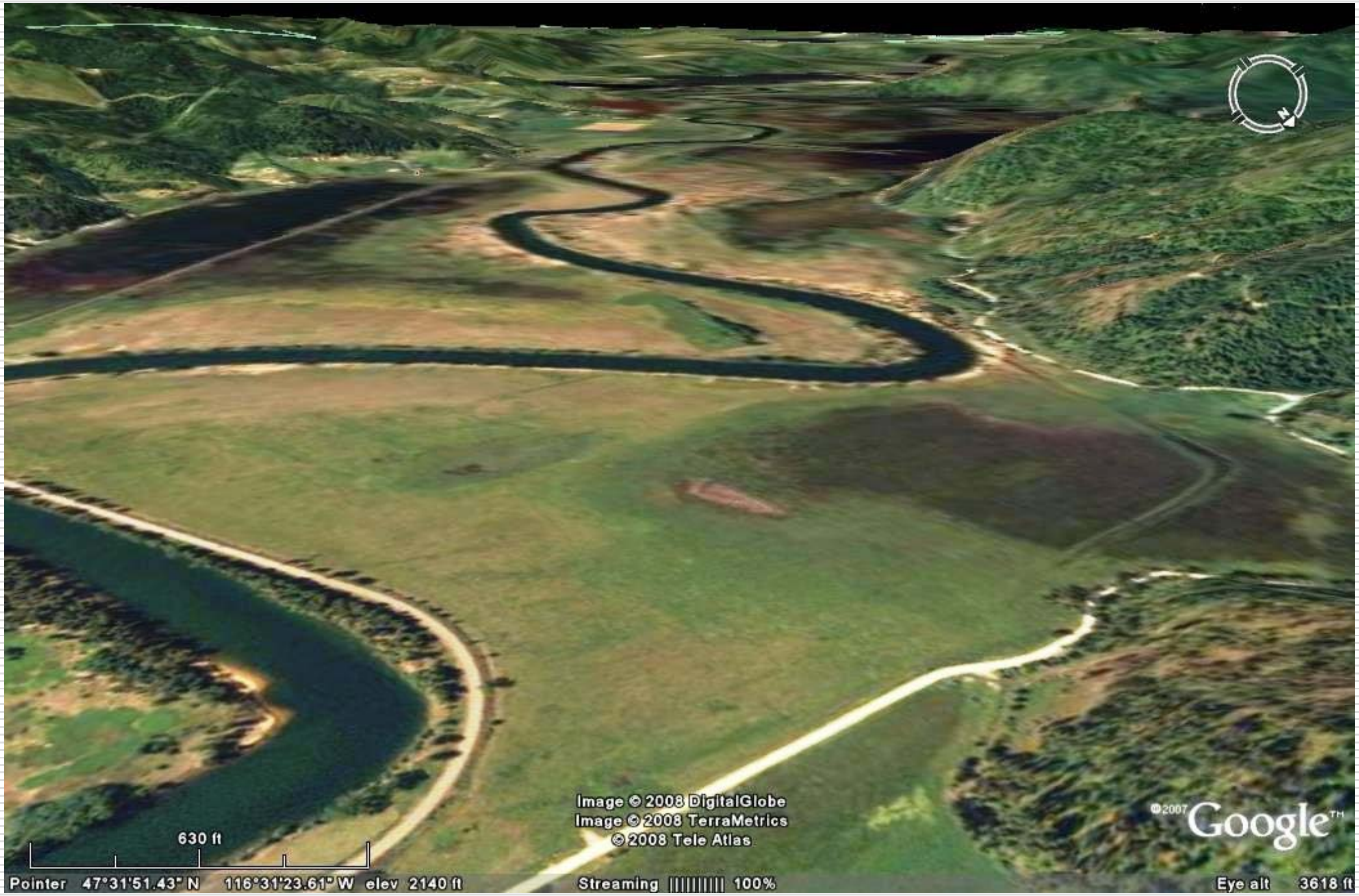
2008 Flood Sample Results

A-14 – Rose Lake Boat Ramp.

Rose Lake/Orling Slough

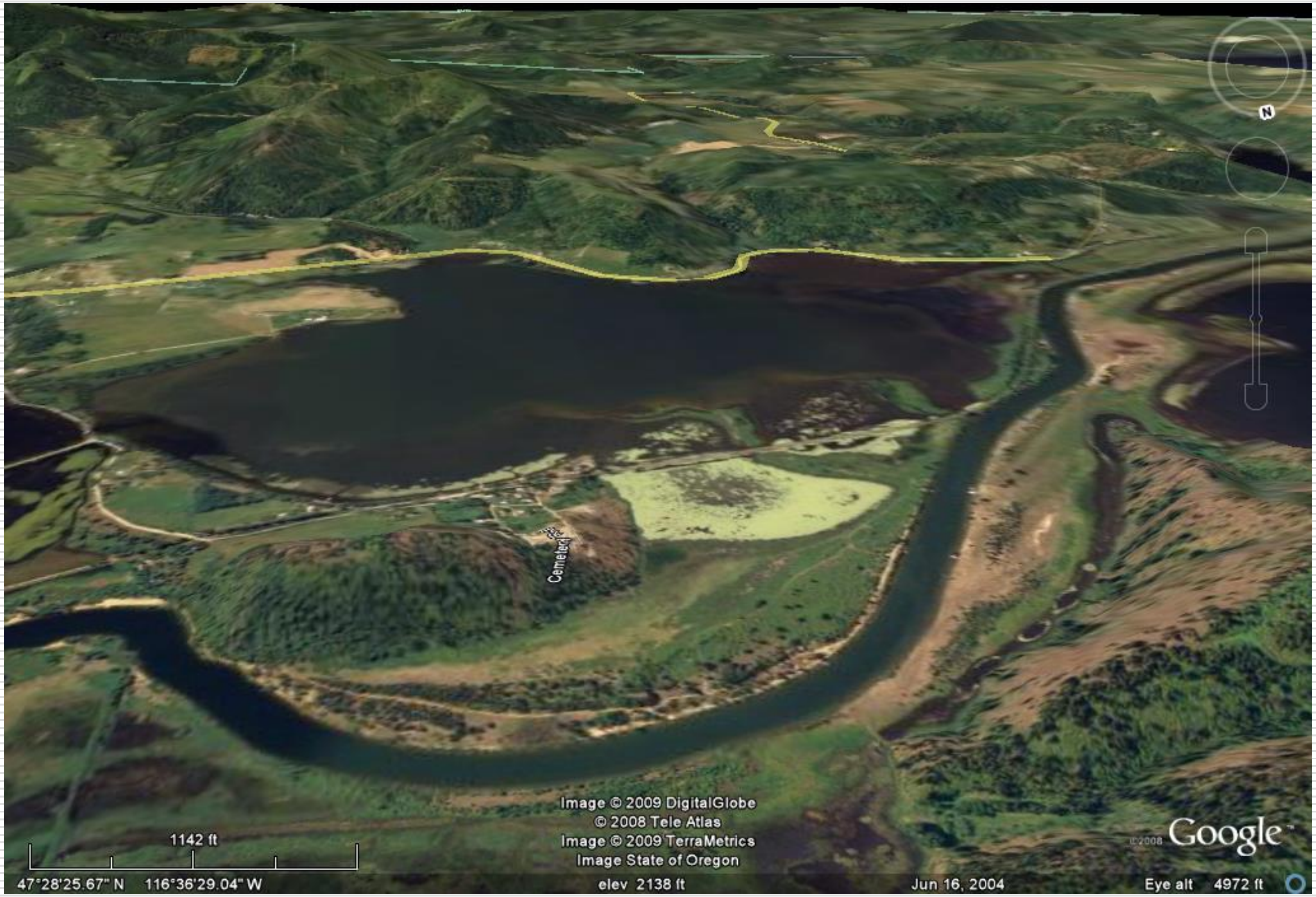
CDAR – DS of Rose Lake

CDAR ds of Rose Lake (GE synthetic image)



CDAR @ Medimont

CDAR @ Medimont (GE Synthetic Image)



ECSM Next Steps

- Comb Existing Information
- Fold Germane Info. into Existing Body of Knowledge (CSM) => ECSM
- Share Topical memos with PFT/TLG/CCC
- Receive input/update memos as appropriate
- Finalize Topical Memos
- Select model and develop
- ROD Amendment Planning => Implement

Where the River meets the Lake

Harrison Slough
Bulk: 2960
63 µm - 250 µm: 2710
< 63 µm: 2590

Anderson Lake Wayside
Bulk: 3650
63 µm - 250 µm: 3080
< 63 µm: 2960